

WHAT IS CLAIMED IS:

1. A method for power-saving in a wireless local area network including a point coordinator and plural stations, each having an active state and a power-saving state, and being able to transmit and receive data through a radio medium directly to and from the point coordinator, the method comprising:

a beacon transmitting step in which the point coordinator periodically transmits a beacon frame with a schedule information which includes plural sets of association identification and time slot information, the association identification indicating that there is duration for a corresponding station to receive/transmit data and the time slot information specifying the time that the corresponding station is in the active state for receiving/transmitting data;

a beacon receiving step in which each station periodically enters its active state to receive the beacon frame; and

a wake-up step in which if there is duration for a specific station to receive/transmit data, the specific station enters its active state to receive/transmit data in the time specified by the time slot information in the beacon frame. (same with the claim 4, so delete this paragraph)

2. The method as claimed in claim 1, wherein in the beacon receiving step, each station enters its power-saving state after receiving the beacon frame.

3. The method as claimed in claim 1, wherein in the wake-up step, each station stays in its power-saving state if there is no corresponding association

identification in the schedule information.

4. The method as claimed in claim 1, wherein further comprises:

a re-entering sleep mode step in which each specific station re-enters its power-saving state after the data transmission.

5 5. The method as claimed in claim 1, wherein in the beacon transmitting step, the time slot information is a time stamp.

6. The method as claimed in claim 1, wherein in the beacon transmitting step, the time slot information is a time offset.

7. The method as claimed in claim 1, wherein in the beacon transmitting
10 step, the schedule information is scheduled according to a schedule algorithm for meeting QoS requirements.

8. A method for power-saving in a wireless network including a point coordinator and plural stations, each having an active state and a power-saving state, and being able to transmit and receive data through a
15 radio medium directly to and from the point coordinator, the method comprising:

a beacon transmitting step in which the point coordinator periodically transmits a beacon frame;

a schedule information transmitting step in which the point coordinator
20 transmits a schedule information after transmitting the beacon frame, the schedule information including plural sets of association identification and time slot information, the association identification indicating that there is duration for a corresponding station to receive/transmit data and the time slot information specifying the time that the corresponding station is in the active

state for receiving/transmitting data;

a beacon and schedule information frame receiving step in which each station periodically enters its active state to receive the beacon frame and the schedule information; and

5 a wake-up step in which, if there is duration for a specific station to receive/transmit data, the specific station enters its active state to receive/transmit data in the time frame specified by the time slot information in the schedule information frame.

9. The method as claimed in claim 8, wherein in the beacon and schedule
10 information receiving step, each station enters its power-saving state after receiving the beacon frame and the schedule information frame.

10. The method as claimed in claim 8, wherein in the wake-up step, each station stays in its power-saving state if there is no corresponding association identification in the schedule information.

15 11. The method as claimed in claim 8, wherein further comprises:
a re-entering sleep mode step in which each specific station re-enters its power-saving state after the data transmission.

12. The method as claimed in claim 8, wherein in the schedule information transmitting step, the time slot information is a time stamp.

20 13. The method as claimed in claim 8, wherein in the schedule information transmitting step, the time slot information is a time offset.

14. The method as claimed in claim 8, wherein in the beacon transmitting step, the schedule information is scheduled according to a schedule algorithm for meeting QoS requirements.

15. A method for power-saving in a wireless local area network including a plurality of stations, one station being designated as control station and the remaining stations having an active state and a power-saving state, and being able to transmit and receive data through a radio medium
5 directly to and from each other, the method comprising:

an association step in which the remaining stations associate with the control station to obtain their association identifications;

a schedule information transmitting step in which the control station transmits a schedule information frame after a beacon frame followed by a
10 predetermined time period, the schedule information including a duration field set to a specific time duration, an Address 1 field set to a particular multicast address, and a frame body having a plurality of sets of association identification and time slot information, the association identification indicating that there is a corresponding remaining station to access the radio
15 media, the time slot information specifying the time that the corresponding remaining station is in active state for accessing the radio media;

a beacon and schedule information receiving step in which each remaining station periodically enters its active state to receive the beacon frame and the schedule information frame; and

20 a wake-up step in which, if there is an association identification indicates that there is a corresponding remaining station to access the radio media, the remaining station enters its active state to access the radio media in the time specified by the time slot information in the schedule information frame.

16. The method as claimed in claim 15, wherein in the beacon and schedule information receiving step, each remaining station enters its power-saving state after receiving the beacon frame and the schedule information frame.

5 17. The method as claimed in claim 15, wherein in the wake-up step, each remaining station stays in its power-saving state if there is no corresponding association identification in the schedule information frame.

18. The method as claimed in claim 15, wherein further comprises:
a re-entering sleep mode step in which each corresponding remaining
10 station re-enters its power-saving state after the data transmission.

19. The method as claimed in claim 15, wherein in the schedule information transmitting step, the time slot information is a time stamp.

20. The method as claimed in claim 15, wherein in the schedule information transmitting step, the time slot information is a time offset.

15 21. The method as claimed in claim 15, wherein in the schedule information transmitting step, the predetermined time period is a PIFS free media period defined in the IEEE 802.11 specification.

22. The method as claimed in claim 15, wherein in the beacon transmitting step, the schedule information is scheduled according to a
20 schedule algorithm for meeting QoS requirements.

23. A system for power-saving in a wireless local area network, comprising:

plural stations, each having an active state and a power-saving state, being able to transmit and receive data through the radio media directly to

and from a point coordinator, and periodically entering its active state to receive a beacon frame; and

the point coordinator which periodically transmits the beacon frame with a schedule information including plural sets of association
5 identification and time slot information, the association identification indicating that there is duration for a corresponding station to receive/transmit data, the time slot information specifying the time that the corresponding station is in the active state for receiving/transmitting data;

wherein, if there is duration for a specific station to receive/transmit
10 data, the specific station enters its active state to receive/transmit data in the time specified by the time slot information in the beacon frame.

24. The system as claimed in claim 23, wherein each station enters its power-saving state after receiving the beacon frame.

25. The system as claimed in claim 23, wherein each station stays in its
15 power-saving state if there is no corresponding association identification in the schedule information.

26. The system as claimed in claim 23, wherein each specific station re-enters its power-saving state after the data transmission.

27. The system as claimed in claim 23, wherein the time slot information
20 is a time stamp.

28. The system as claimed in claim 23, wherein the time slot information is a time offset.

29. The system as claimed in claim 23, wherein the schedule information is scheduled according to a schedule algorithm for meeting QoS

requirements.

30. A system for power-saving in a wireless local area network, comprising:

plural stations, each having an active state and a power-saving state,
5 being able to transmit and receive data through a radio medium directly to and from a point coordinator, and periodically entering its active state to receive the beacon frame and the schedule information; and

the point coordinator which periodically transmits the beacon frame and transmits a schedule information after transmitting the beacon frame, the
10 schedule information including plural sets of association identification and time slot information, the association identification indicating that there is duration for a corresponding station to receive/transmit data, the time slot information specifying the time that the corresponding station is in the active state for receiving/transmitting data;

15 wherein, if there is duration for a specific station to receive/transmit data, the specific station enters its active state to receive/transmit data in the time frame specified by the time slot information in the schedule information frame.

31. The system as claimed in claim 30, wherein each station enters its
20 power-saving state after receiving the beacon frame and the schedule information frame.

32. The system as claimed in claim 30, wherein each station stays in its power-saving state if there is no corresponding association identification in the schedule information.

33. The system as claimed in claim 30, wherein each specific station re-enters its power-saving state after the data transmission.

34. The system as claimed in claim 30, wherein the time slot information is a time stamp.

5 35. The system as claimed in claim 30, wherein the time slot information is a time offset.

36. The system as claimed in claim 30, wherein the schedule information is scheduled according to a schedule algorithm for meeting QoS requirements.

10 37. A system for power-saving in a wireless local area network, comprising:

plural first stations associating with a control station to obtain their association identifications, each first station having an active state and a power-saving state, being able to transmit and receive data through the radio
15 medium directly to and from each other, and periodically entering its active state to receive a beacon frame and a schedule information frame; and

a second station designated as the control station, which transmits the schedule information frame after the beacon frame followed by a predetermined time period, the schedule information including a duration
20 field set to a specific time duration, an Address 1 field set to a particular multicast address, and a frame body having a plurality of sets of association identification and time slot information, the association identification indicating that there is a corresponding first station to access the radio media, the time slot information specifying the time that the corresponding first

station is in active state for accessing the radio media;

wherein if there is an association identification indicates that there is a corresponding first station to access the radio media, the first station enters its active state to access the radio media in the time specified by the time slot
5 information in the schedule information frame.

38. The system as claimed in claim 37, wherein each first station enters its power-saving state after receiving the beacon frame and the schedule information frame.

39. The system as claimed in claim 37, wherein each first station stays in
10 its power-saving state if there is no corresponding association identification in the schedule information frame.

40. The system as claimed in claim 37, wherein each specific first station re-enters its power-saving state after the data transmission.

41. The system as claimed in claim 37, wherein the time slot information
15 is a time stamp.

42. The system as claimed in claim 37, wherein the time slot information is a time offset.

43. The system as claimed in claim 37, wherein the predetermined time period is a PIFS free media period defined in the IEEE 802.11 specification.

20 44. The system as claimed in claim 37, wherein the schedule information is scheduled according to a schedule algorithm for meeting QoS requirements.